Kansas Department of Labor
Workers Compensation Division

Closed Claims Analysis
Calendar Year 2019

Contents

Introduction

This study presents an analysis of a sample of Workers Compensation claims that were closed by their respective claims administrators during Calendar Year (CY) 2019. Not every injury results in a claim for indemnity benefits, but those that do allow our division to collect information about the costs of those claims. When no further payments are expected on a claim, a final report (FN) is submitted that details the total of all benefits and expenses paid to date.[1] The final reports allow us to examine claims in terms of the benefits paid on behalf of the insured from start to finish.

The data for the present study consist of 4,762 claims taken from the set of all claims that closed in 2019 (the initial data set), excluding claims that did not meet certain restrictions, outlined in Appendix B.[2] A closed claim is any claim reporting at least one indemnity payment for which a final payment has been submitted.

Payment information was collected from the final payment for each claim, while basic information pertaining to the claimant and the circumstances and nature of the injury were collected from First Reports of Injury (FROIs).

[1] Certain assumptions and limitations are worth noting. Because the state of Kansas legislates the actions that employers and employees must take when a workplace injury takes place, we assume that injuries are reported honestly by both employees and their employers. EDI industry implementation standards, together with Kansas legislation, determine the sequencing of EDI files as well as which information is mandatory on a claim file. We, therefore, assume that claim administrators have received the training needed to submit correct claim and payments information to our division. We assume that when an FN is filed, no further payments are anticipated. It should be noted that this is not always the case, as claims may be reopened for various reasons, but we assume that this is true at the time of reporting.

[2] Because a lag can exist between when an FN report was created and when it is received by our division, we define the set of FNs by the date they were generated in the Electronic Data Interchange (EDI) system, which is not necessarily the date it was created.

1. Characteristics of Closed Claims

1.1 Duration of Closed Claims

Duration is defined as the number of days from the date that the injury is reported to the date that the final report is filed. Of the 4,762 claims in this study, the mean duration is 591 days while the median is 430 days. Figure 1.1 illustrates the distribution of the duration of claims in our sample set in terms of the number of days the claim remains open. Note that the mean duration is heavily influenced by a small percentage of claims that take several years to close, while most claims close in a much shorter time period. For this reason, the median is the more salient measure of duration.

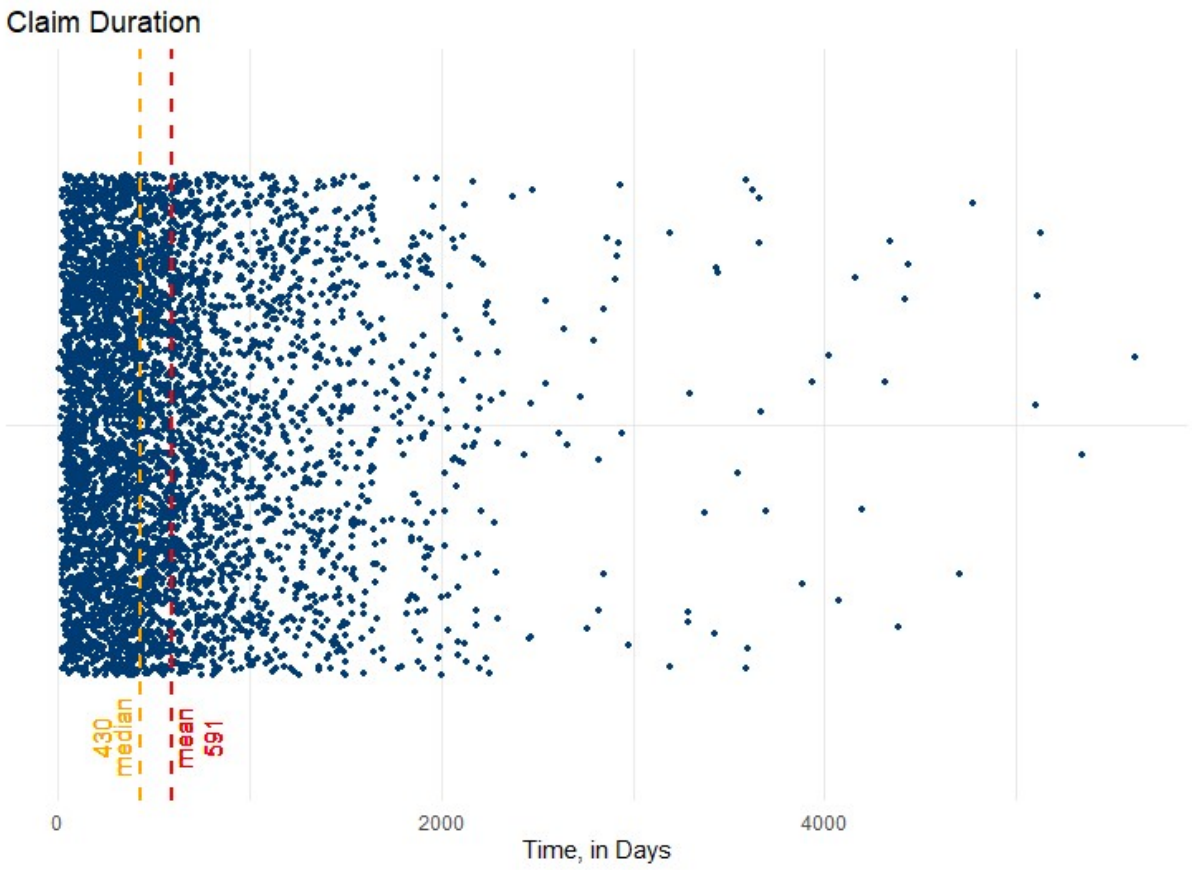

Figure 1.1 Distribution of Claim Duration in Days

Figure 1.2 shows the duration of claims by years instead of days. The year groupings have been chosen to highlight the distribution of claim duration data. Of the 4,762 closed claims, 42.2 percent of claims closed in one year or less. This makes sense as the median, or 50 percent, is equal to 430 days. The majority of claims closed in less than 2 years (73.4 percent) while only 1.7 percent of claims remained open for several years.

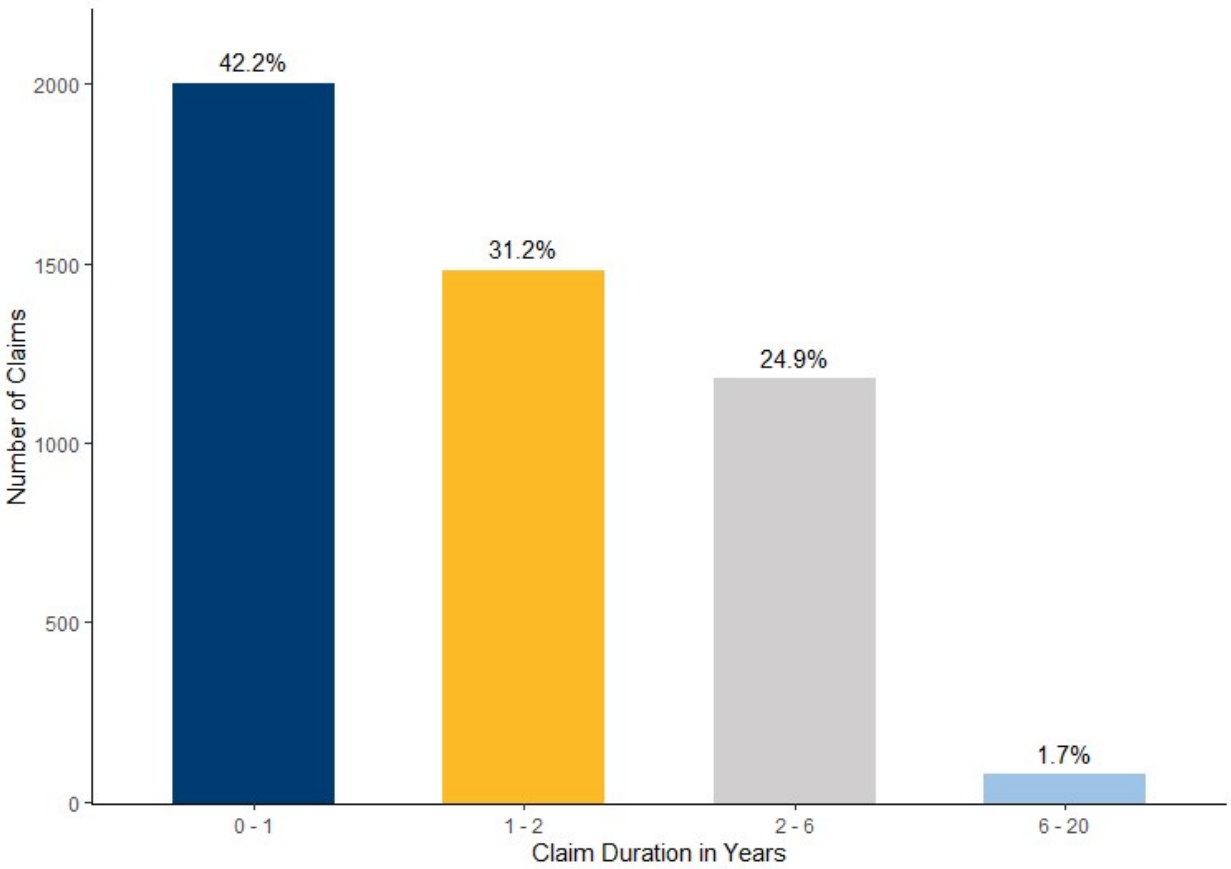

Figure 1.2 Claim Duration in Years, Grouped by Year Categories

The Workers Compensation Division has reported the median duration of a claim since 2016 and that data is plotted in Figure 1.3 for the years 2016-2019. There was a slight increase in the median duration of a claims from 2018 to 2019, but overall this median claim duration has not changed significantly.

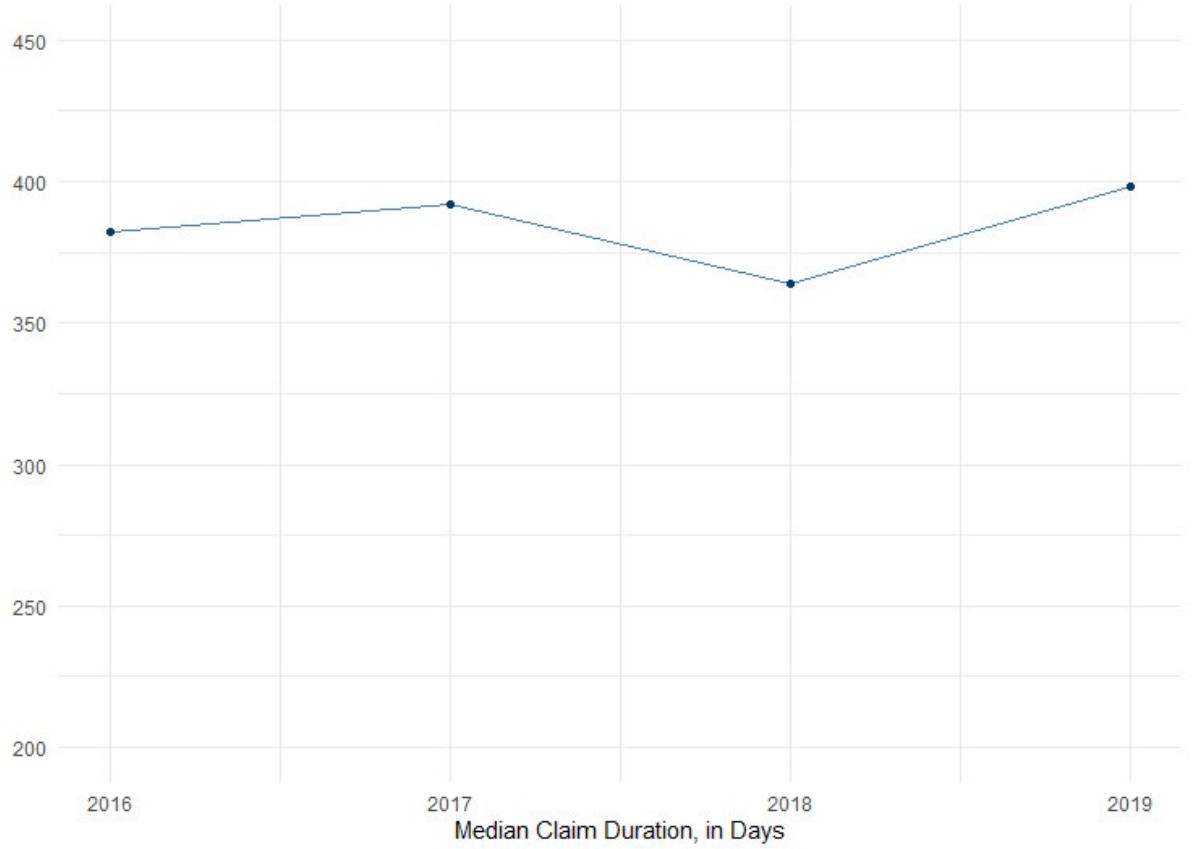

Figure 1.3 Median Duration of Claims, Years 2016 – 2019

1.2 Total Costs of Closed Claims

The total reported cost of benefits associated with indemnity claims that closed in calendar year 2019 was $142,914,860. Medical benefits comprised the greatest share of this cost at 51.0 percent, followed by indemnity benefits at 44.5 percent, legal benefits at 4.2 percent and other benefits at 0.4 percent. Figure 1.4 illustrates total benefits paid on behalf of insurers for claims with reported indemnity benefits that closed in 2019. The total amount is given, as well the percentage that each type of expense represents of the total. Note that the medical benefits stated below are the medical benefits reported on *indemnity* claims and not claims that report only medical benefits.

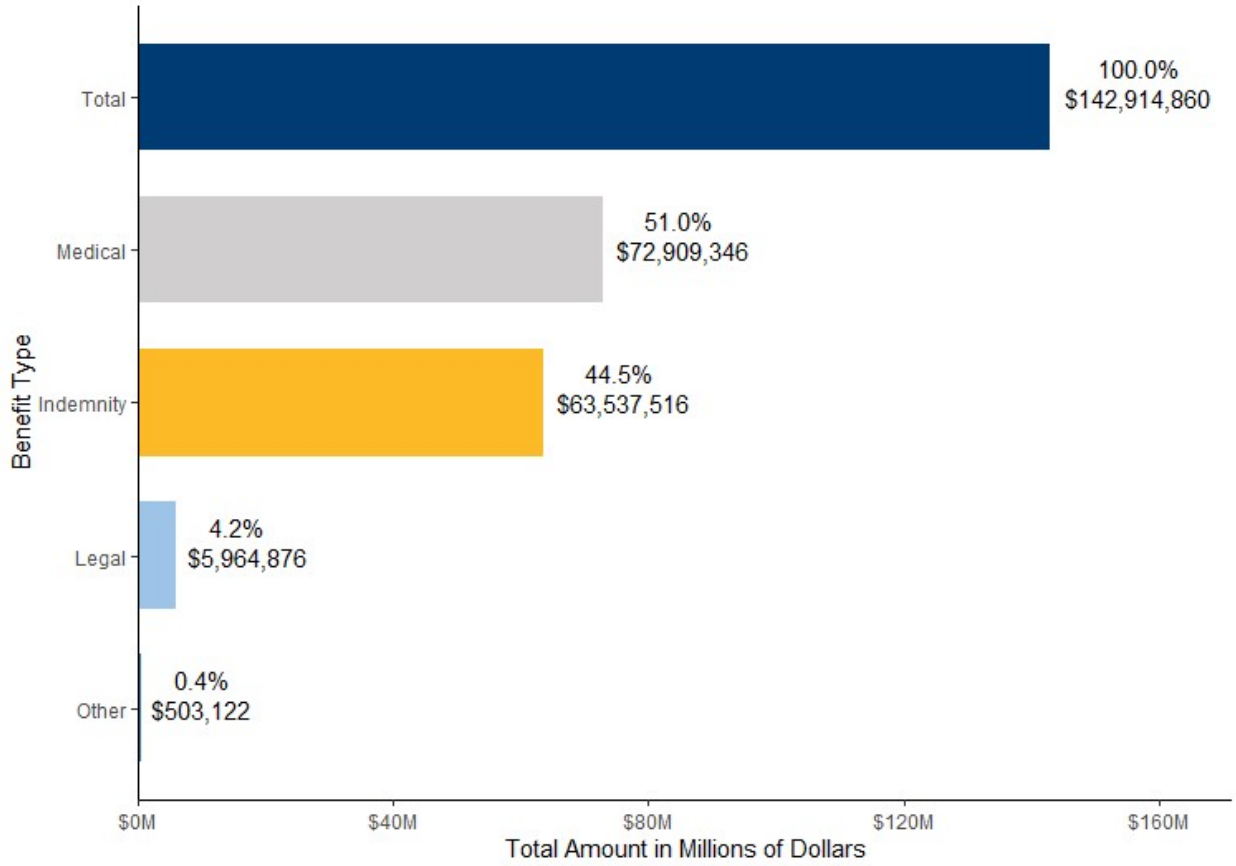

Figure 1.4 Total Benefits Paid for All Claims that Closed in 2019

In terms of individual claims, the mean cost of a claim in our 2019 sample set was $30,024 while the median cost was $16,307. The cost of an individual claim is defined as the total dollar amount of all expenses and indemnity payments incurred during the life of a claim. Legal and other (non-medical, -indemnity, or -legal) benefit types on a claim had median values of $0. This means that, while a few claims did incur legal and other expenses, the typical claim that closed in 2019 did not involve insurer-paid benefits not categorized as indemnity or medical. Figure 1.5 below illustrates mean and median benefits by benefit type paid for the sample set of claims closing in calendar year 2019.

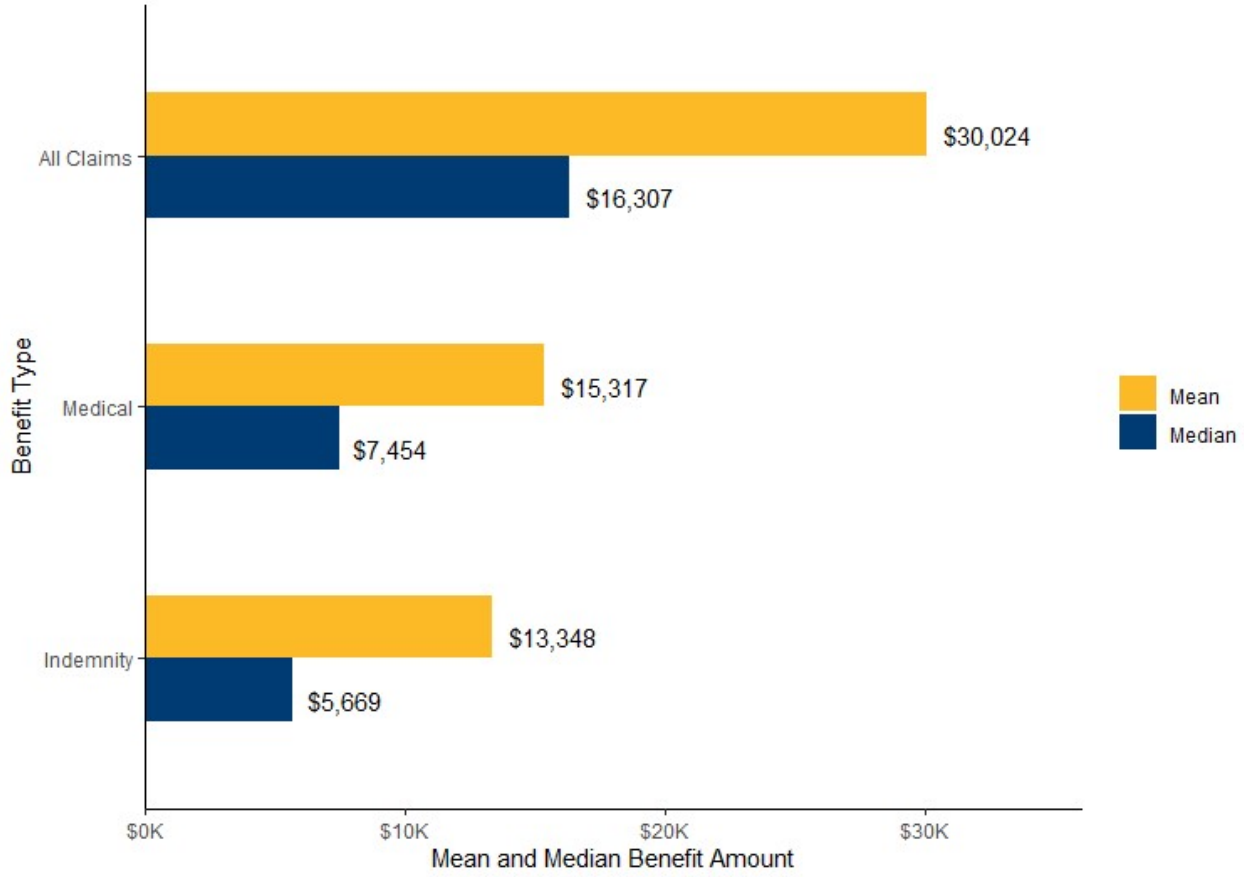

Figure 1.5 Mean and Median Paid Benefit Amounts by Benefit Type

In Figure 1.5 (above) note that the mean paid benefit amount of a claim is greater than the median paid benefit amount of a claim for both medical and indemnity benefits. This is because the mean paid amount of benefits, like mean duration, is influenced by a small percentage of very expensive claims. This positively skewed distribution of cost data is typical as there are generally a small percentage of costly claims in any given report year. For this reason, the median paid benefit amount is generally regarded as more informative than the mean. Figure 1.6 (below) illustrates the distribution of the total costs of claims data and demonstrates the similarity between the cost data and the duration data.

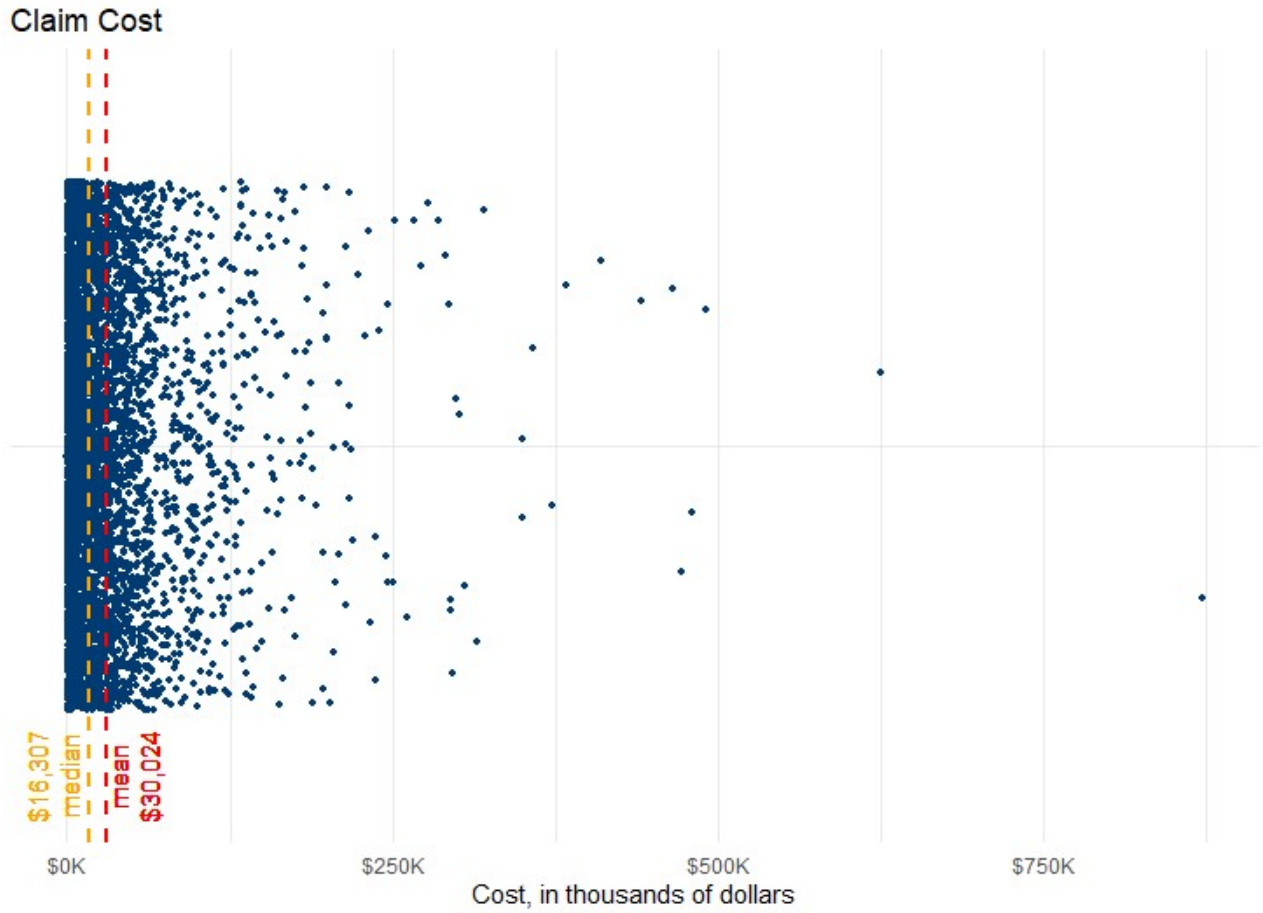

Figure 1.6 Distribution of Claim Total Paid Benefits in Thousands of Dollars

1.2.1 Contributors to Claim Cost

To better understand what contributes to the cost of a claim, the data is divided into percentiles by the total paid benefits of a claim. The lower 3 quartiles are aggregated to represent claims whose costs fall into the lower 75 percent of the distribution. The upper quartile represents claims whose costs fall into the highest quarter (25th percentile) of the distribution. The lower-cost claims set includes claims whose paid benefits total $36,773 or less and the higher-cost claims set include claims that total greater than $36,773. Fatal injuries are removed from the dataset before dividing into percentiles since fatalities are uncommon and expensive and could skew the characteristics of the higher-cost claims. The mean and median of each group is shown in Figure 1.7. Note that each group exhibits similar distributional properties as the entire sample set in which the mean is greater than the median.

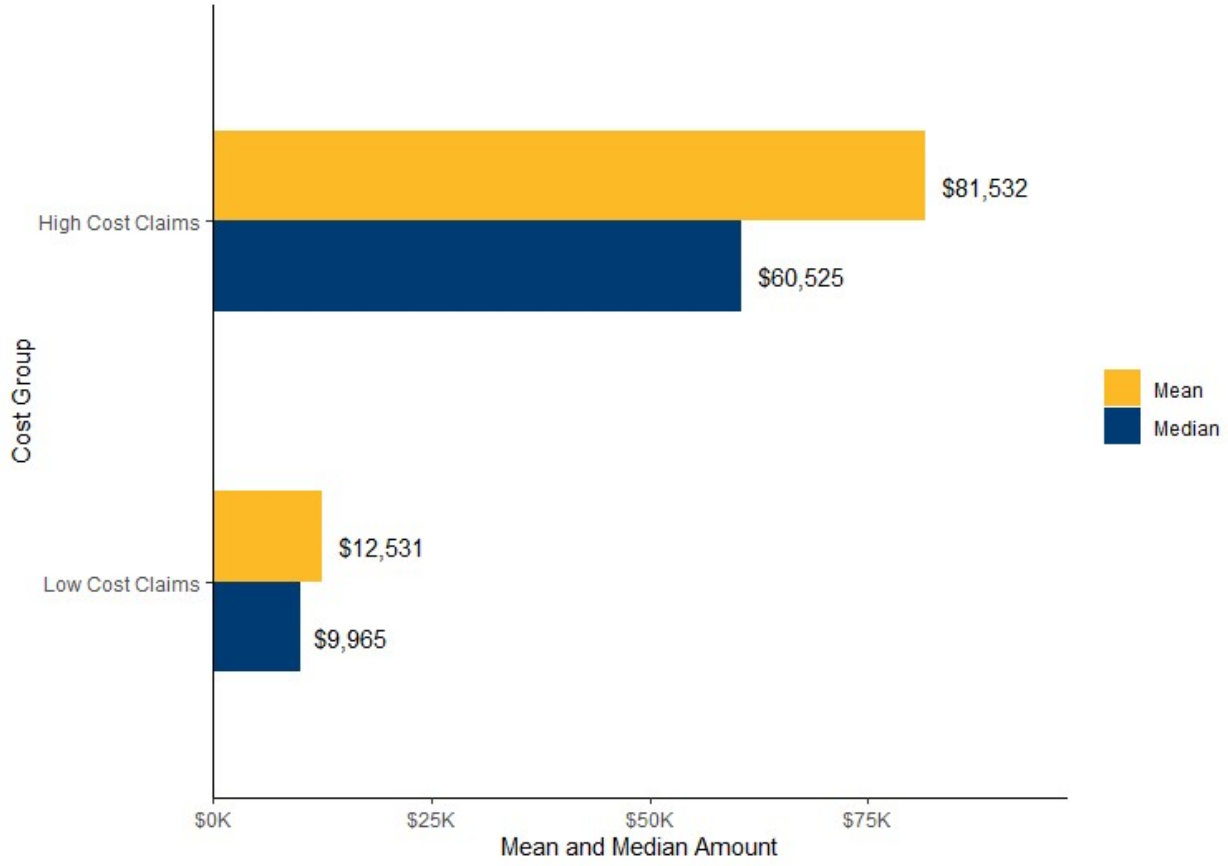

Figure 1.7 Mean and Median Cost of Claims for Lower-Cost and Higher-Cost Groups

When the costs are examined in terms of benefits paid in each group, both groups display nearly the same proportions of paid benefit amounts by each benefit type. Medical paid benefits are a slightly greater percentage of total paid benefits in the higher-cost claims, but only by about 4 percent. In other words, the higher-cost claims group does not exhibit significantly greater paid benefit amounts in a specific benefit type.

Table 1.1 Percentage of Paid Benefits in Lower-Cost and Higher-Cost Groups by Benefit Type

	High Cost	Low Cost
Indemnity	45.59%	47.35%
Medical	50.66%	47.35%
Legal	3.49%	4.89%
Other	0.26%	0.40%

One characteristic that higher cost claims do exhibit is longer claim duration. The mean and median duration of claims for higher and lower cost claims are shown in Figure 1.8 (below). The total cost of a claim is positively correlated with claim duration (r = 0.47), meaning that there is a moderate positive relationship between the movement in claim cost as related to the movement in claim duration. This makes sense as the longer the claim remains open, the more costs may be associated with it.

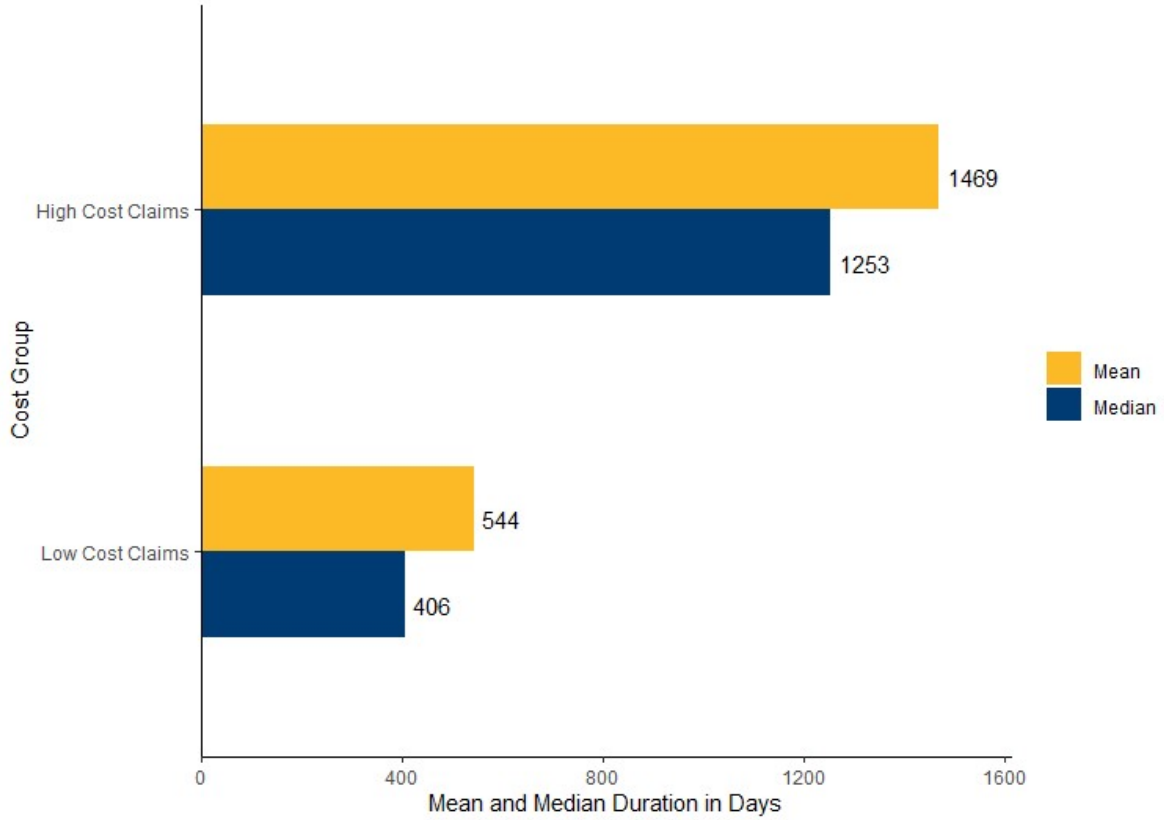

Figure 1.8 Mean and Median Claim Duration for Lower-Cost and Higher-Cost Groups in Days

1.3 Injuries Reported by Sector and Industry

In terms of economic sectors that report injuries, over one quarter (26.5 percent) of all injuries was reported as occurring in the manufacturing sector. Manufacturing contributes more than twice the amount of claims than the next highest contributor (healthcare at 9.5 percent). Other top contributing sectors are included in Figure 1.10, which illustrates the percent of injuries contributed by a specific sector as a percentage of all injuries reported for the sample set of claims that closed in 2019.

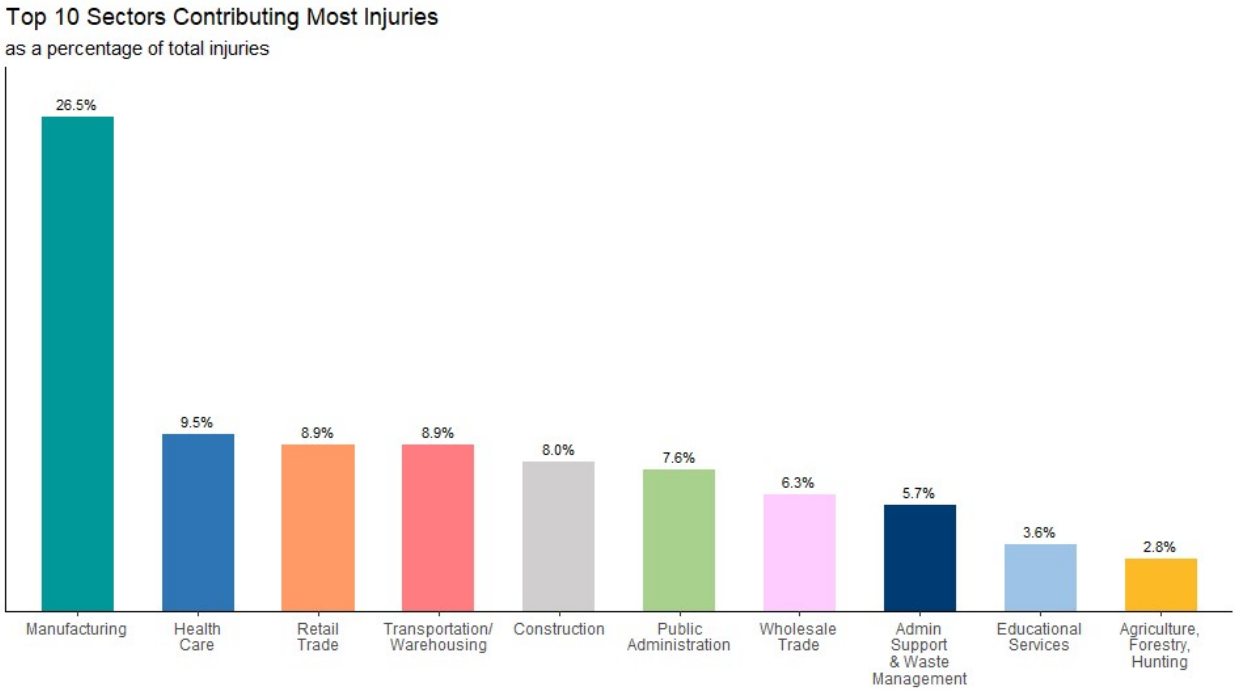

Figure 1.10 Top Ten Sectors Contributing Injury Reports by Percentage of Total Injuries Reported

When the manufacturing sector claims are disaggregated into the unique manufacturing industries that report injuries, it becomes evident that the aircraft manufacturing industry accounts for most manufacturing claims at 17.5 percent. This is followed by the animal (except poultry) slaughtering industry (10.2 percent), the blind and shade manufacturing industry (9.8 percent), the metal crown, closure, and other metal stamping industry (except automotive) (8.9 percent), and the farm machinery and equipment manufacturing industry (3.6 percent).

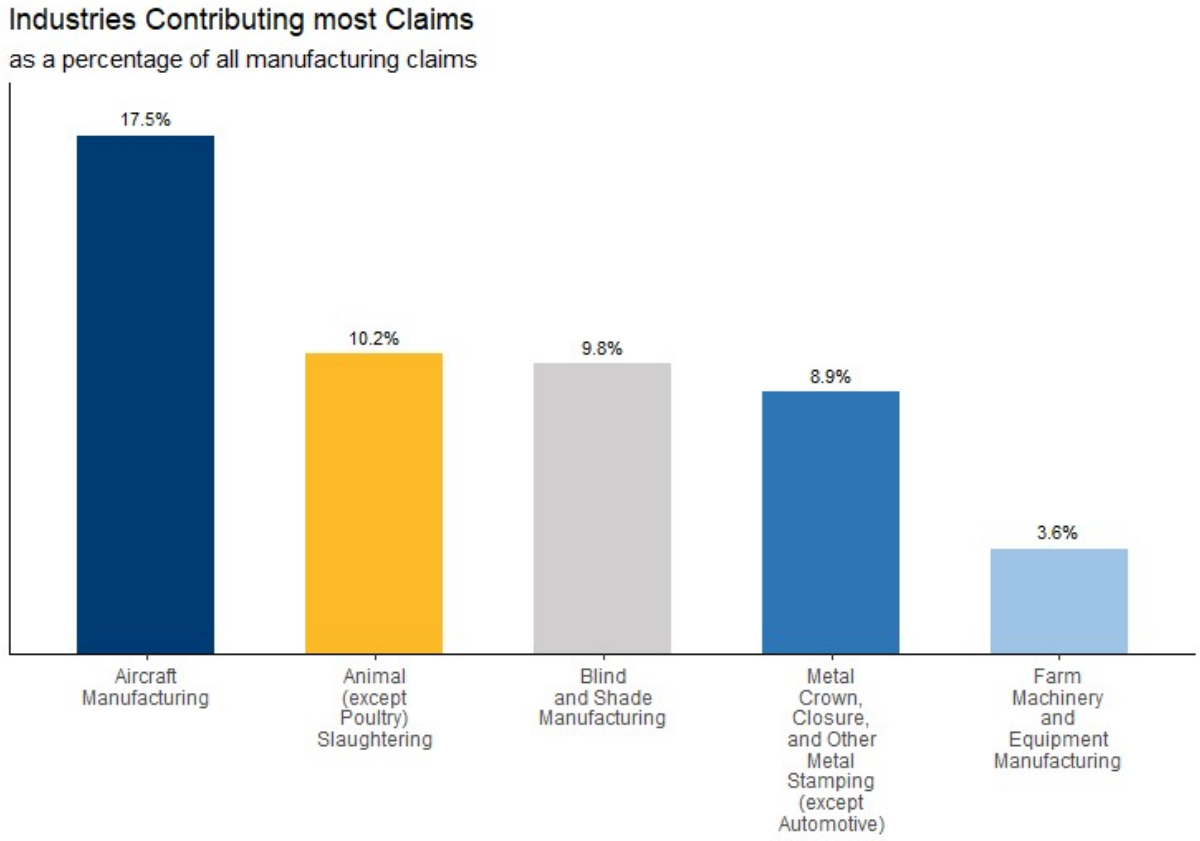

Figure 1.11 Manufacturing Industries that Report Injuries, as a Percentage of all Manufacturing Sector Reports

As a proportion of the total benefits paid on 2019 closed claims, the manufacturing sector comprised 29.3 percent of total paid benefits, nearly the same proportion as its percentage of the total number of reported injuries

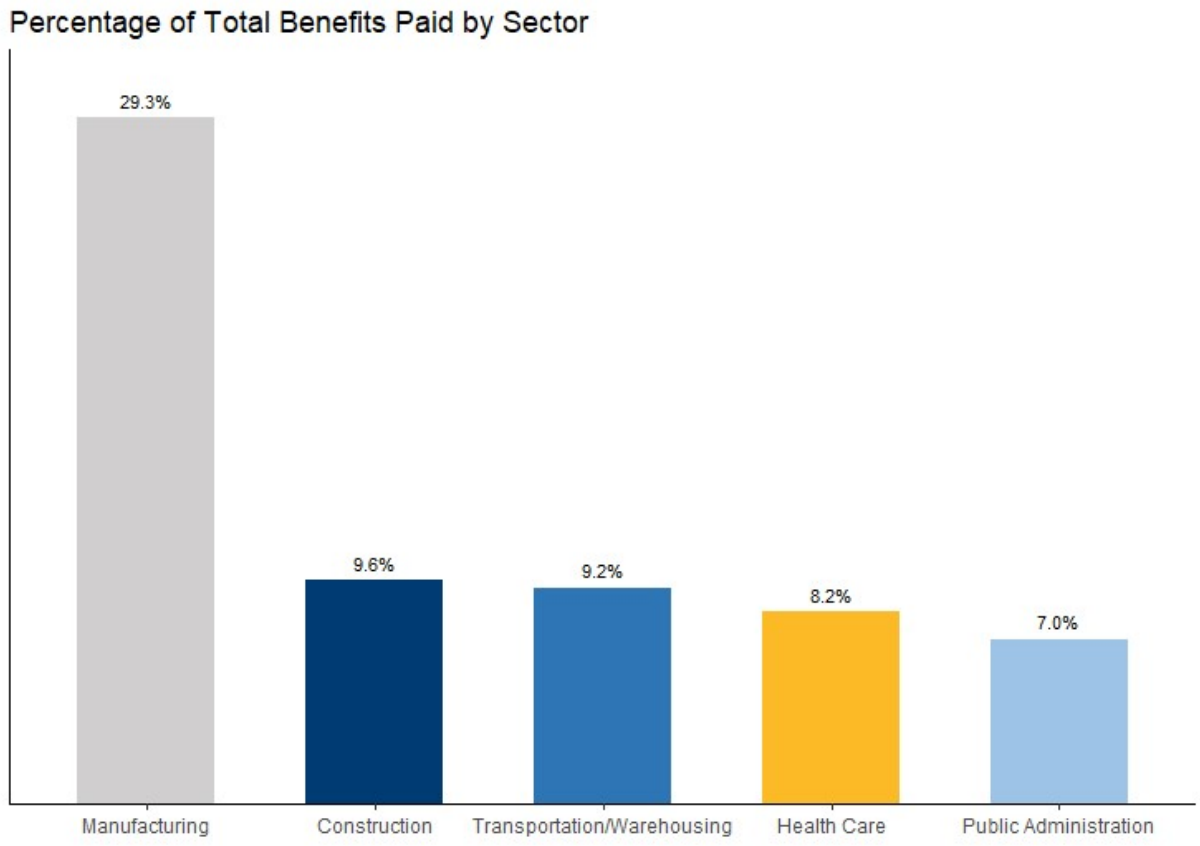

Figure 1.12 Proportion of Total Benefits Paid by Sector

Table 1.3 (below) displays the mean and median indemnity costs by sector, ranked in terms of mean cost. Although manufacturing contributes over a quarter of all claims and total paid benefits, it ranks 5th of 18 sectors in terms of mean cost of a claim ($37,420.66). The real estate industry has the highest mean cost of a claim at $40,199.91.

Table 1.2 Mean and Median Total Costs of Claims by Sectors, Ranked by Mean Claim Cost

Sector	Mean Claim Cost	Median Claim Cost
Real Estate	$40,199.91	$18,259.38
Other Services	$40,102.84	$19,046.92
Construction	$37,420.66	$19,511.86
Utilities	$34,088.31	$30,303.07
Manufacturing	$33,213.99	$21,451.27
Information	$31,708.32	$13,803.26
Profession, Scientific, Technical Services	$31,158.37	$18,723.14
Transportation/Warehousing	$31,130.37	$11,581.43
Agriculture, Forestry, Hunting	$30,942.09	$13,768.39
Finance and Insurance	$29,906.27	$19,226.27
Wholesale Trade	$29,240.22	$15,904.62
Educational Services	$28,314.85	$15,726.04
Public Administration	$27,910.65	$14,661.59
Arts, Entertainment, Recreation	$27,099.13	$11,250.98
Admin Support & Waste Management	$26,078.30	$11,021.53
Mining, Oil, Gas	$25,926.85	$13,761.35
Health Care	$25,909.40	$15,591.84
Retail Trade	$19,421.94	$9,409.73

1.4 Characteristics of Injuries

When claims are filed by trading partners, they must categorize the body part injured, the cause of injury, and the nature of injury. These categories, while not identical across all states, are tracked by Workers Compensation Insurance Organizations (WICOS), and are useful for analysis in many different agencies.

1.4.1 Body Parts

The purpose of the body part category is to identify the physical parts of the body which have sustained injury. For this reason, one can select multiple body parts as well as use codes that indicate "multiple" injuries sustained to a specific region of the body. Table 1.13 (below) shows the frequency of each body part selected in the 2019 set of closed claims. It shows that, of the 5,710 body parts cited in the data set, shoulder, knee, and lower back were the three most commonly selected.

Table 1.3 Total Injuries by Body Part Injured

Body Part Injured	Count	Body Part Injured	Count
Shoulder(s)	868	Upper Leg	41
Knee	614	Multiple Lower Extremities	40
Lower Back Area	509	Soft Tissue	35
Multiple Body Parts	421	Brain	34
Finger(s)	299	Body Systems and Multiple Body	31
Wrist	263	Toes	30
Ankle	257	Disc (Trunk)	25
Hand	256	Lumbar & or Sacral Vertebrae	24
Foot	193	Disc (Neck)	23
Elbow	184	Multiple Neck Injury	22
Lower Arm	146	Vertebrae	20
Abdomen Including Groin	145	Multiple Trunk	18
Upper Arm	145	Buttocks	17
Lower Leg	132	Eye(s)	15
Wrist(s) & Hand(s)	99	Internal Organs	15
Upper Back Area	98	Whole Body	15
Thumb	97	Big Toe	14
Multiple Upper Extremities	89	Pelvis	13
Multiple Head Injury	85	Nose	11
Hip	77	Spinal Cord (Neck)	11
Chest	67	Facial Bones	10
Other Facial Soft Tissue	59	Lungs	8
Skull	59	Ear(s)	7
Insufficient Info to Properly Identify	48	Mouth	5

Body part codes can also be organized by larger, more general categories based on the region of the body. The frequency of injuries of these broader categories is shown below in Figure 1.13. The more general categories make patterns of injuries more evident. For example, shoulder is the most commonly cited body part on claims and, when aggregated with other body parts in the same body region, creates an upper extremities category that accounts for 42.4 percent of all injuries. This is almost twice the share of total injuries as the next highest category, lower extremities, which accounts for 24.4 percent of all body parts selected.

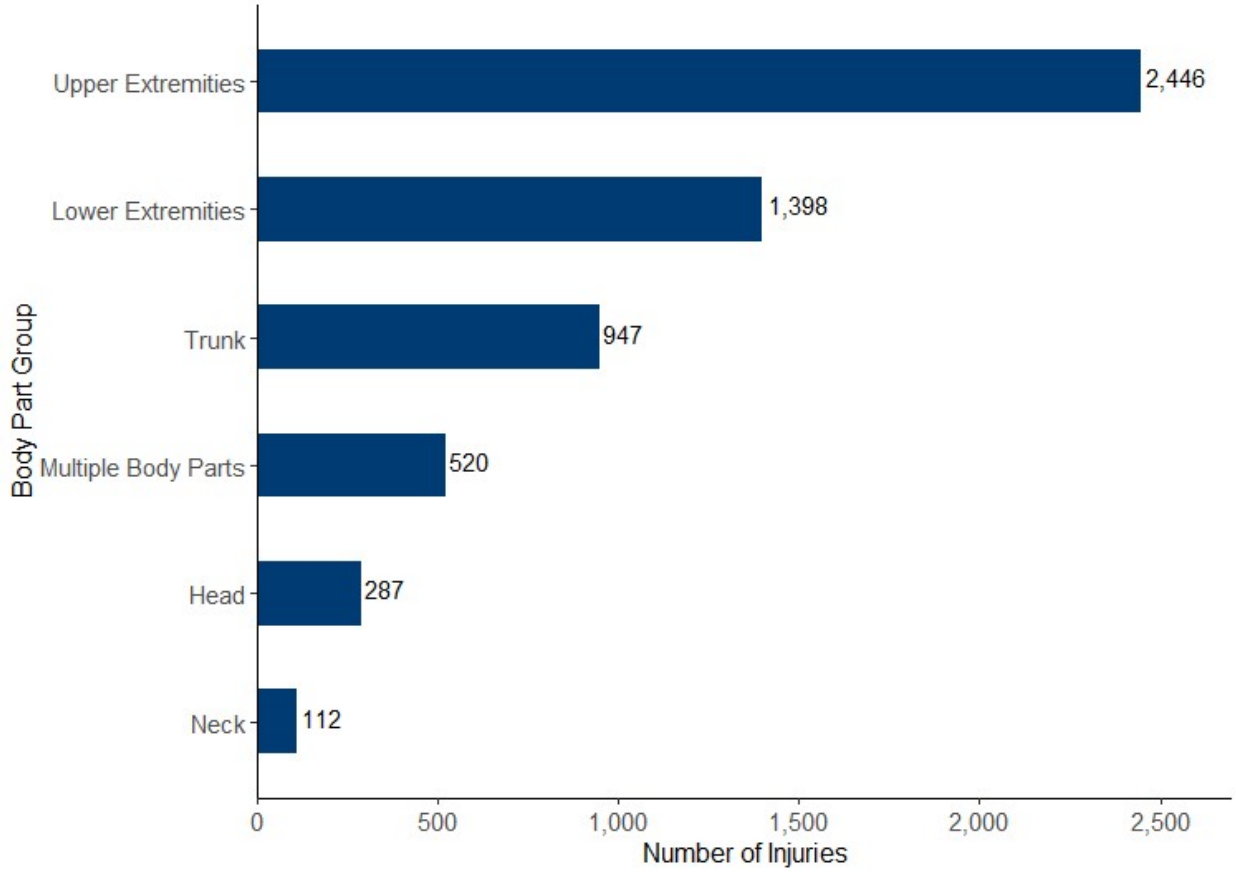

Figure 1.13 Total Injuries by Primary Body Part Group

1.4.2 Causes of Injury

The cause of injury codes describe how an injury occurred. If multiple injuries are sustained in one accident, one primary cause of injury must be identified. Table 1.4 lists the frequency of cause of injury codes that were selected for each closed claim.

Cause of injury codes, like body part codes, can be grouped more generally into primary causes of injury. For example, burns, whether resulting from hot objects or chemicals, can be aggregated as injuries caused by burns. Figure 1.14 lists causes of injury, aggregated into primary causes and grouped by frequency. The "Strain or Injury By" category refers to a strain or injury caused by a variety of movement such as twisting, lifting, pushing, reaching, etcetera, which have been grouped together. Lifting was the highest cause of injury, followed by Strains, and finally Falls/Slips/Trips.

Table 1.4 Total Injuries by Cause of Injury

Cause of Injury	Count	Cause of Injury	Count
Lifting	612	Powered Hand Tool, Appliance	40
Strain or Injury By, NOC	347	Hand Tool, Utensil; Not Powered	38
Fall, Slip or Trip, NOC	294	Motor Vehicle	36
Pushing or Pulling	294	Motor Vehicle, NOC	34
On Same Level	290	Into Openings Shafts, Excavations, Floor Openings, etc.	31
Repetitive Motion Carpel Tunnel Syndrome	269	Striking Against or Stepping On, NOC	31
Other - Miscellaneous, NOC	213	Animal or Insect	26
From Different Level (Elevation) Off Wall, Catwalk, Bridge, etc.	173	Object Handled By Others	26
Object Being Lifted or Handled	167	Repetitive Motion Callous, Blister, Etc.	22
On Ice or Snow	160	Moving Parts of Machine	21
Falling or Flying Object	148	Other Than Physical Cause of Injury	19
Twisting	145	Vehicle Upset/Overturned/Jackknifed	18
From Ladder or Scaffolding	108	Jumping	15
Fellow Worker; Patient	85	Person in Act of a Crime	13
Using Tool or Machinery	85	Absorption, Ingestion or Inhalation, NOC	11
Caught In, Under or Between, NOC	84	Wielding or Throwing	11
Struck or Injured, NOC	84	Stepping on Sharp Object	10
Machine or Machinery	79	Collision with a Fixed Object Standing Vehicle or Stationary Object	9
Holding or Carrying	76	Foreign Matter (Body) in Eye(s)	4
Reaching	75	Broken Glass	3
From Liquid or Grease Spills	70	Collapsing Materials (Slides of Earth) Either Man Made or Natural	3
Object Handled	69	Continual Noise	3
Slipped, Do Not Fall	68	Electrical Current	3
Collision or Sideswipe With Another Vehicle	65	Gunshot	2
Stationary Object	65	Rubbed or Abraded, NOC	2
Caught, Puncture, Scrape, NOC	57	Crash of Rail Vehicle	1
On Stairs	56	Moving Part of Machine	1
Cumulative, NOC	48	NA	NA
Hand Tool or Machine in Use	41		

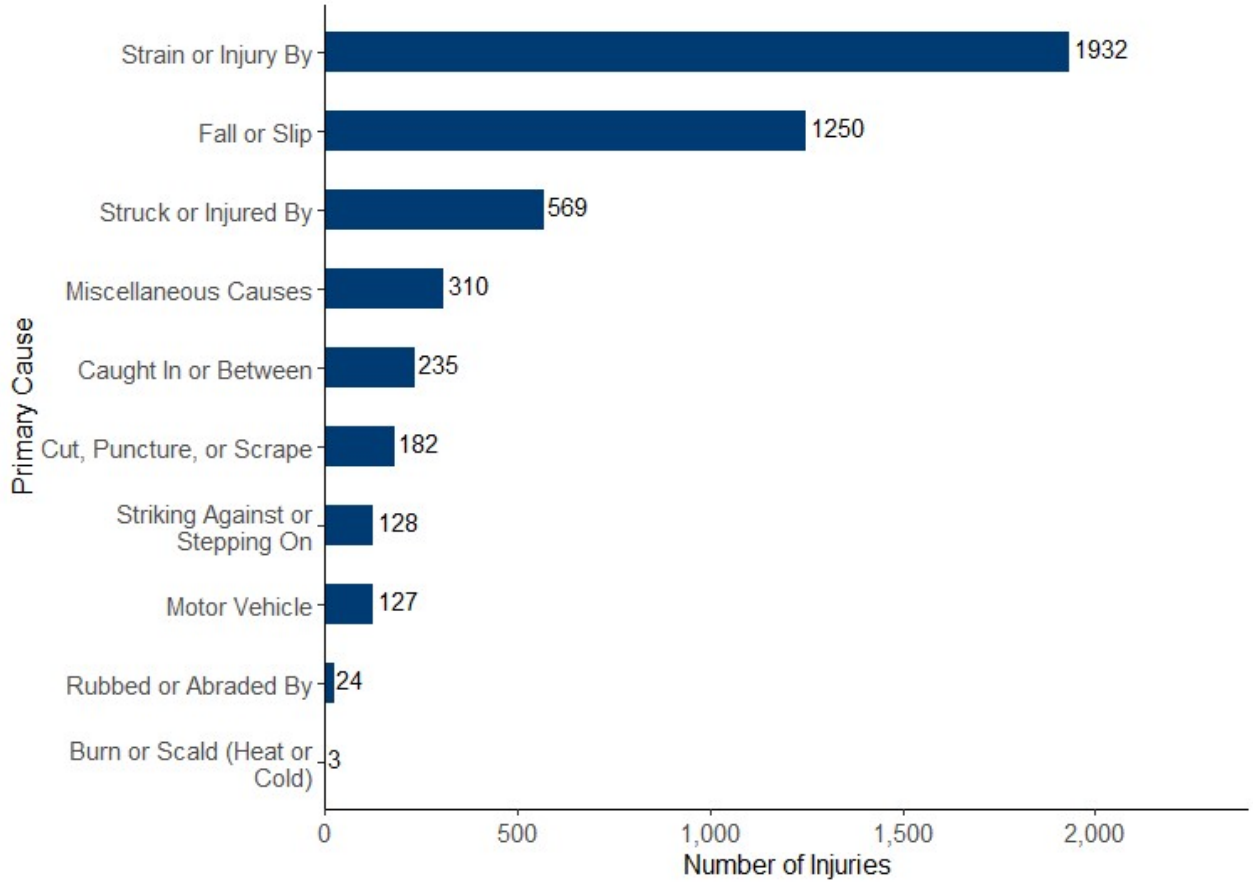

Figure 1.14 Total Injuries by Primary Cause of Injury

Some causes of injury result in costlier workers compensation claims. Figure 1.15 displays the median cost of claims, grouped by cause of injury codes, of the ten cause of injury codes with the highest median costs. Notice that the causes that resulted in claims with the highest median costs generally have the lowest frequencies (see Table 1.5).

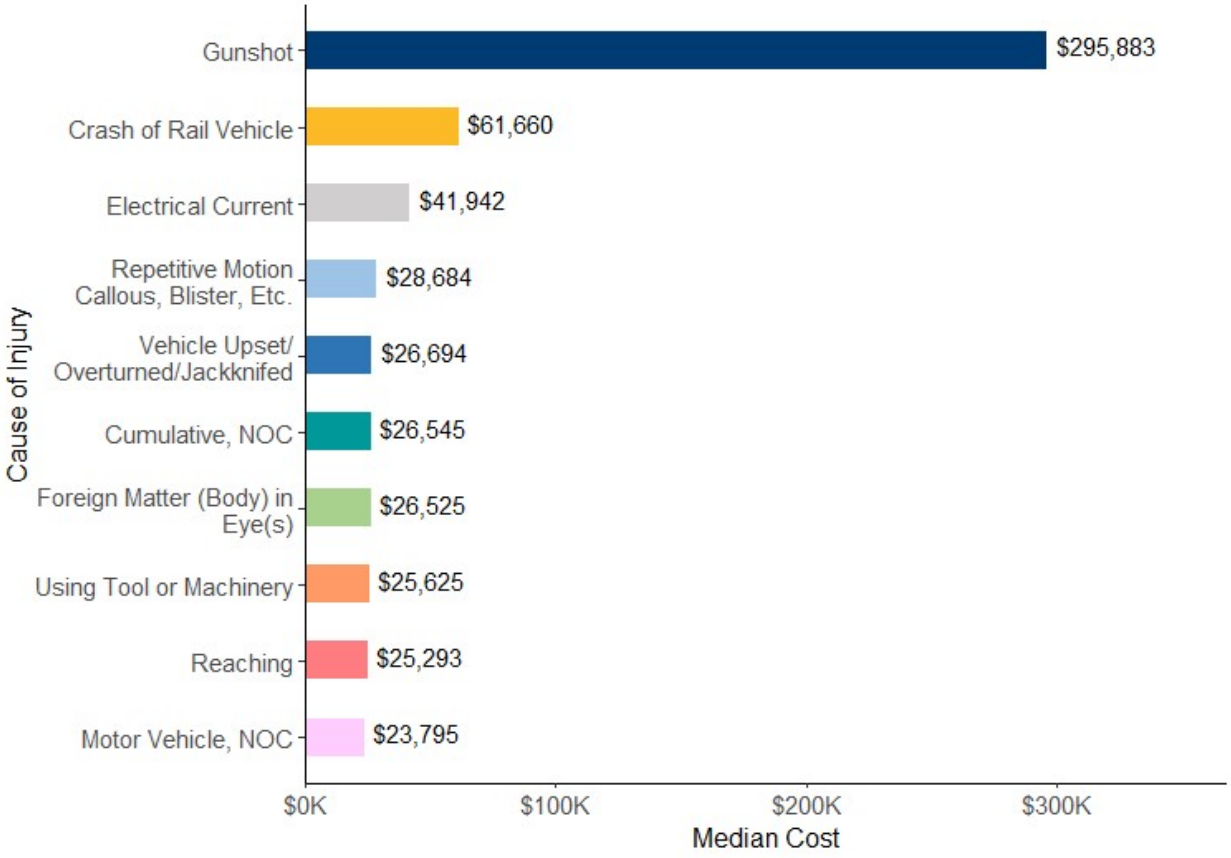

Figure 1.15 Top Ten Causes of Injury by Median Total Cost

1.4.3 Nature of Injuries

Nature of injury can be understood as a description of the injury sustained to a body part. In other words, nature of injury is the result of an accident rather than the cause. The figure below lists the frequencies of nature of injury codes as they occurred in the claims sample set.

Table 1.5 Total Injuries by Nature of Injury

Nature of Injury	Count	Nature of Injury	Count
Strain or Tear	1485	Amputation	38
Fracture	627	Puncture	38
Sprain or Tear	465	Vascular	19
Contusion	426	No Physical Injury	11
All Other Specific Injuries, NOC	312	Infection	10
Laceration	233	Multiple Injuries (Incl. Physical/Psychological)	6
Rupture	165	Severance	6
Inflammation	164	Burn	5
Multiple Physical Injuries Only	138	Foreign Body	4
Dislocation	130	Syncope	4
Carpal Tunnel Syndrome	105	Asphyxiation	3
Hernia	104	Electric Shock	3
Concussion	82	Hearing Loss or Impairment	3
Crushing	69	Mental Stress	3
All Other Occupational Disease, NOC	45	Poisoning - General	3
All Other Cumulative Injury, NOC	43		

In terms of median costs associated with different nature of injury codes, there are some similarities to the causes of injury median costs. For example, the median costs of claims that listed dust disease and electric shock as the nature of the injury were very high, but the frequencies of those nature of injury codes was very low. This pattern is less extreme, but still true for other nature of injury codes with high median costs. Figure 1.16 illustrates that the majority of nature of injury codes associated with higher median costs occur relatively less frequently than the most common nature of injury codes selected in the sample set.

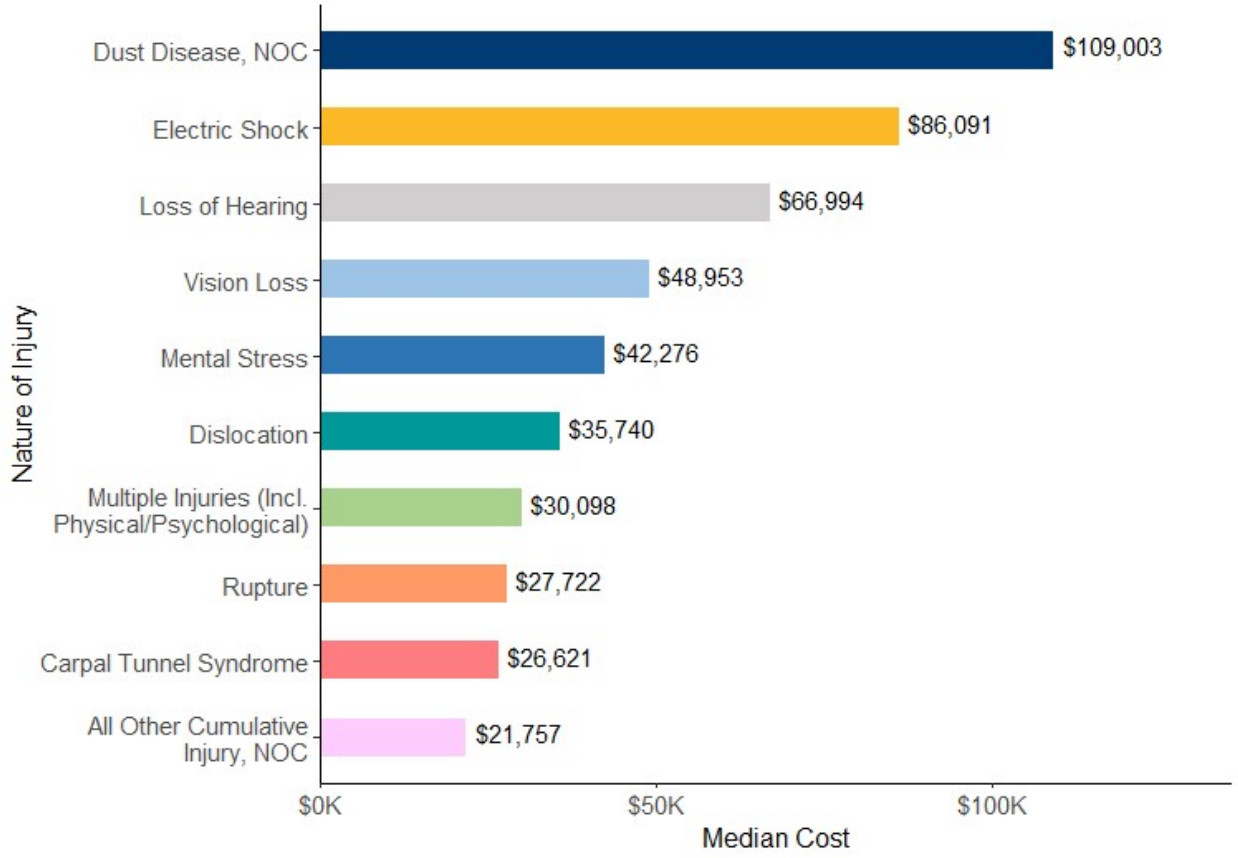

Figure 1.16 Top Ten Natures of Injury by Median Total Cost

Appendix A: Data Set Variables

Claim-related variables

Qualitative:

- Claimant characteristics
  - Age in Years
  - Gender
  - Annual Wage
  - Industry Classification (NAICS code)
- Injury characteristics
  - Type of Loss (Traumatic Injury, Occupational Disease, Cumulative/Repetitive Trauma)
  - Cause of Injury; how the injury occurred
  - Nature of Injury; how body part(s) and/or systems were affected
  - Body Part: which body part(s) and/or systems were affected

Quantitative:

- Cost of individual benefit types
- Aggregated benefit costs (Total Benefits Paid, Indemnity Benefits Paid, Medical Benefits Paid, etc.)

Temporal:

- Claim Time: the number of days between the submission date of the earliest First Report of Injury and the submission date of the final (SROI FN) report

Appendix B: Data Methodology

Beginning with the initial data set (n = 5322) Claims were removed if they did not meet a basic threshold for inclusion. Claims that did not have regular benefits reported on their Final (FN) summary EDI (Electronic Data Interchange) reports were excluded (324 claims)[3] ,as were all claims from a particular EDI trading partner who failed to report any medical payment information (98 claims). We also excluded claims with certain types of claimant information. These included one claim whose claim time was greater than 40 years, and claims with claimants having an annual wage less than $1500 (86 claims) or greater than $250,000 (11 claims). Finally, claims were excluded if they were later denied by judicial determination, rendering reported payment information inaccurate (40 claims).

[3] The failure to include summary indemnity payment information on an indemnity claim indicates a serious reporting error. Because of the complexity of EDI reporting requirements, it is possible for indemnity claims to be closed with information missing on the final report. Claims administrators use a variety of reporting tools, some of which do not automatically calculate benefit summary information on reports.